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A Review of Baum's *Understanding Behaviorism: Science, Behavior, and Culture*

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This is unquestionably an important book in the behaviorist literature. Over the past quarter century, William Baum has contributed significantly to both the theoretical and empirical analysis of behavior. During his years at Harvard University and the University of New Hampshire, the list of his mentors, collaborators, and colleagues, including Skinner and Herrnstein, reads like a virtual who's who of behavior analysts. In short, he is in a particularly good position to have written this book.

Understanding Behaviorism is intended to serve as an introduction to radical behaviorism but at the same time to be a comprehensive and serious exposition. In this way it is reminiscent of Skinner's classic of over 40 years earlier, *Science and Human Behavior* (1953), the book that transformed me into a behaviorist; a comparison of the two books is instructive. Both were targeted for undergraduates but can be profitably read by more advanced graduate students, nonbehaviorist psychologists, philosophers, social scientists, and other professionals. The advantage of this feature is that both books are highly readable, free of jargon, and clear about basic concepts. The disadvantage is that both suffer from a dearth of footnotes and citations; the interested reader seeks in vain for sources to support questionable assertions.

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The two also share a common structure. Each begins with a discussion of behaviorism, which, as Baum correctly notes, is the philosophy underlying the science of behavior, not that science itself. Baum's discussion (in the first three chapters) covers a brief history and definition of behaviorism, a discussion of free will, the distinctions between methodological and radical behaviorism and between mentalism and naturalism, and the introduction of private events. Readers familiar with Skinnerian behaviorism will be surprised to find that Baum identifies the distinction between methodological and radical behaviorism with the distinction between realism and pragmatism (see below).

Both books then proceed to introduce the basic empirical concepts of the science of behavior. Baum reviews classical conditioning, reinforcement, stimulus control, and behavioral chains in chapters 4 through 6. In this section we see very clearly how Baum has used the scientific progress over the 40 years since Skinner's book to advance behaviorist theory. From the very outset, Baum embeds the basic empirical behavioral concepts, including reinforcement, into modern evolutionary biology. He works out in detail the parallels among natural selection, reinforcement, and cultural selection. Whereas Skinner depended on the concept of survival in relating operant conditioning to evolutionary theory, Baum, more in keeping with modern biology, bases his theoretical framework on the concept of fitness, the tendency of a genetic variant "to increase from one generation to the next relative to the other genotypes in the popula-

tion" (p. 53). (Given this strong functional orientation, it is surprising that Baum, p. 75, inexplicably confuses functional definition with achievement definition; see Johnston & Pennypacker, 1993, pp. 70ff., 188; Zuriff, 1985, pp. 48ff. and note 73.) Baum's science of behavior is thus more firmly grounded in evolutionary theory and more attuned to contemporary developments in biology.

Having introduced the basic empirical concepts, both books turn to the application of these concepts, first developed in the laboratory, to their extension in explaining complex human behavior, or what Skinner calls the area of interpretation. Baum covers verbal behavior, scientific behavior, rule-governed behavior, and thinking in chapters 7 and 8. Here again, Baum takes advantage of advances in more recent behaviorist thinking. For example, instead of Skinner's (1953, p. 339; 1969, chap. 6) formulation that a rule is a verbal discriminative stimulus that "describes," or "specifies," or is "extracted from" a contingency, Baum (p. 133) explains how the verbal behavior of stating a rule is under stimulus control by the contingency. Baum then works out in detail how the behaviors of rule stating and rule following arise and are maintained. The strength of Baum's exposition is that unlike many other discussions of these topics, his theory stays almost exclusively within the behavioral concepts he has already introduced and does not appeal implicitly to everyday thinking.

On the other hand, a weakness in Baum's treatment of complex behavior in comparison to Skinner's is Baum's deemphasis of precurrent behavior. Skinner (1953, chap. 15) defined precurrent behavior as any behavior that has the effect of changing the variables controlling the actor's own behavior. I have always thought of this as one of Skinner's most innovative and important ideas. However, Baum gives it short shift (pp. 145–146), mentioning it primarily to integrate it into his theory of rule-governed behavior. However, as Baum admits, precurrent behavior is not limited to generating rules. By failing to exploit the concept of precurrent behavior, Baum deprives himself of the richness in Skinner's (1953, chap. 16) analysis of thinking.

A similar problem arises in Baum's discussion of self-control. Skinner's (1953, chap. 15) brilliant discussion of self-control makes extensive use of precurrent behavior. Baum however eschews precurrent behavior and conceptualizes self-control in this way: "Self-control consists of making a choice . . . of behaving according to long-term reinforcement [instead of according to short-term reinforcement]" (p. 158). By defining self-control as a choice between behaving according to one versus another contingency, Baum has left the explanation of self-control somewhat mysterious. To be sure, he does suggest vaguely that self-control arises through "cultural support in the form of rules," but a much stronger analysis is available had he availed himself of the concept of precurrent behavior. Not all self-control, just as not all thinking, is rule governed in his terms. His decision not to do so is all the more surprising in light of the applied research of the past two decades on the role of precurrent behavior in self-management (e.g., Kaplan, 1991).

In their final sections, both Skinner and Baum turn to the implications of their behavioral analyses for social policy and cultural design. In chapters 9 through 14, Baum discusses the notions of freedom, responsibility, relationships, government, religion, values, the evolution of a culture, cultural design, and happiness. It is in this section that Baum is at his strongest and most original, perhaps a surprising assessment of someone most noted for his experimental work. His discussion of freedom and happiness represents major progress in behaviorist thought. It brings to bear the latest studies in adaptation to the norm and equity theory to deal with some of the anomalies in behaviorist treatments of this area. For example, in one of my favorite pas-

sages in this book, Baum (pp. 172ff.) uses the concepts of induced behavior and behavior–reinforcer mismatch to explain why token economies not associated with affection on the part of managers are likely to fail to change the behavior of children.

For the most part, Baum's book is a masterful synthesis and exposition of contemporary behaviorist thought, and I will confine the rest of my review to two unsettled issues that I believe merit extended discussion and over which I differ with Baum. The first is the relationship between psychology and biology. Although there are obvious advantages to integrating operant psychology and evolutionary biology, it can be taken too far. One example appears in Baum's definition of reinforcers:

> Phylogenically important events, when they are the consequences of behavior, are called *reinforcers*. . . . Those events that during phylogeny enhanced fitness by their presence are called reinforcers, because they tend to strengthen behavior that produces them. (p. 58)

In the most straightforward and simple interpretation of this passage, the primary definition of reinforcer is given by the first sentence, which is more likely to be highlighted (in the ubiquitous yellow) by the typical undergraduate. The second sentence offers a secondary characteristic of reinforcers and a reason for the choice of the term. One problem with this definition is that it does not give a necessary condition for something's being a reinforcer; a phylogenically *un*important stimulus may have become a reinforcer (in the empirical sense of the term) through its accidental association in evolution with something else that was phylogenically important. A more serious deficiency with the definition is that it does not permit us ever to know for certain if a stimulus is a reinforcer. With the standard empirical definition (i.e., a stimulus is a reinforcer if it strengthens the behavior it follows), we have a simple test to establish whether a stimulus is a reinforcer. But using Baum's theoretical definition, how do we establish whether a stimulus enhanced fitness during phylogenic history? Consider the range of reinforcers for humans: art, music, humor, games, back rubs. To be sure, we can construct plausible stories of how each of these may have enhanced fitness in the distant past of our species, but these stories would necessarily be highly speculative because we have no scientific record of the postulated phylogenic history. Thus, we can at best make a good guess as to whether a stimulus is a reinforcer, but we can never be sure.

These problems illustrate a more general problem with the integration of operant psychology and evolutionary biology. Currently, most behaviorist explanations of complex human behavior are in the realm of interpretation; that is, they are plausible but unconfirmed extrapolations of behavioral principles that have been well established in the laboratory under highly simplified and controlled conditions. Similarly, most explanations of complex human behavior offered by evolutionary biology are also plausible but unconfirmed extrapolations. Consequently, some of Baum's integration of operant psychology and evolutionary biology results in a compounding of speculation rather than a firmer grounding for his explanatory theory. In short, there is a trade-off in the integration of the two disciplines. Operant psychology gains the benefit of a more comprehensive theory, thereby extending its explanatory range, but in some cases it becomes more speculative, thereby losing the empirical grounding that legitimizes it as an autonomous science.

The second issue arises in Baum's conceptual framework for behaviorism, in particular, in his distinction between methodological and radical behaviorism. Let me first give my understanding of this thorny distinction. Methodological behaviorism is the position that if psychology is to be a science, it must limit its domain to observable and objectively measurable behavior and therefore must exclude the internal

world of consciousness and subjective experience known only through introspection. This is clearly a dualist position: Mind and matter, consciousness and behavior, are accepted and distinguished. Mind and consciousness are excluded only because of the methodological requirements of science. For some behaviorists the methodological requirement includes public observability, for others it means operationalism, and for yet others it means that the subject matter has to be physical. Stevens (1935) is a good example of methodological behaviorism. He viewed his work in psychophysics as the measurement of sensation, but he operationally defined *sensation* as the publicly observable discriminative responses of his subjects.

If radical behaviorism is to be defined in contradistinction to methodological behaviorism, then it is logical to stipulate that radical behaviorism rejects dualism and claims that what is traditionally considered to be the realm of consciousness is not to be ignored but can be understood and accounted for within behavioral science. This position is radical in the sense that it is uncompromising in a way methodological behaviorism is not, and is thoroughgoing in extending its analysis to the very fundamentals of what is considered to be the mind. One radical behaviorist approach, exemplified by Ryle (1949), is to show that terms usually thought to refer to mental events actually refer instead to patterns of behavior and dispositions to behave. The extreme (!) radical behaviorist position is that the data of introspection are invalid, consciousness does not exist, and there is nothing more to explain. Another radical behaviorist position, adopted by Watson, Guthrie, Hull, Spence, and Skinner, among others, claims that events alleged to occur in the separate realm of consciousness are actually internal stimuli and responses. These covert or private events obey the same behavioral laws as overt behavior and differ only in their location and perhaps their size and speed. I shall call this form of radical behaviorism "covert-event radical behaviorism."

One form of covert-event radical behaviorism is that proposed by Skinner (1945, p. 294, 1974, pp. 13–17, 219). Like all covert-event radical behaviorists, Skinner makes extensive use of covert events in explaining apparently mental events such as thinking, perceiving, and imagining (Zuriff, 1979). Skinnerian covert-event radical behaviorism differs from the other forms in two respects. First, Skinner argues that because covert events are included in the domain of behavioral science yet are observable only by the person within whom they occur, we must drop the scientific requirement of public observability, or what he calls "truth by agreement." (I have argued against this implication and have suggested instead that covert events have the status of inferred theoretical entities; thus, intersubjective agreement can be maintained as a methodological principle; Zuriff, 1984, 1985, pp. 86ff.) Second, Skinnerian covert-event radical behaviorism is characterized by its association with Skinner's innovative theory of how verbal behavior can be brought under the stimulus control of covert events by a verbal community that cannot directly observe those events.

We see that there are a variety of radical behaviorisms, of which Skinnerian covert-event radical behaviorism is but a subspecies. However, this fact was lost sight of historically (Schneider & Morris, 1987). As behaviorism increasingly became identified with Skinnerian behaviorism, radical behaviorism came to be narrowly defined, equated with Skinnerian covert-event radical behaviorism and eventually with the entire Skinnerian approach to the analysis of behavior (see Day, 1983, pp. 96ff.).

Thus for Skinnerians, radical, in contrast to methodological, behaviorism was characterized by the rejection of intersubjective agreement as a methodological requirement and the acceptance of covert events into the domain of the behavioral science. This is the

canonical form of the distinction within the behavior-analytic literature, despite the fact that it is neither historically nor philosophically justifiable. (For a review of the history of the phrase *radical behaviorism,* see Schneider & Morris, 1987.)

To his credit, Baum discards the narrow Skinnerian distinction even though his book is heavily Skinnerian in its orientation. However, the philosophical schema with which he replaces it will confuse Skinnerians and disappoint readers looking for an improved conceptual framework for radical behaviorism. On the one hand, Skinnerians will be surprised, for example, that Rachlin is identified as a radical behaviorist even though he rejects the inclusion of covert events in the science of behavior (Rachlin, 1984, p. 566). However, in accord with the basic definition of radical behaviorism, Baum is correct in this assignment because Rachlin indeed rejects the dualism of methodological behaviorism, although he does not adopt Skinnerian covert-event radical behaviorism.

On the other hand, Baum's own analysis of methodological and radical behaviorism is seriously flawed. He identifies methodological behaviorism with realism (p. 26), which he characterizes by four tenets: (a) the "real world seems somehow to be out there, in contrast with our experience, which somehow seems to be in here" (p. 18), the location of the "self . . . who controls my external body" (p. 32); (b) our knowledge of the world is an inference from our experience, because "we have direct contact only with what our senses tell us" (p. 19); (c) "explanation consists in the discovery of the way things really are" (p. 19); and (d) behavior is to be described in mechanical terms, because "mechanical movements would supposedly bring us as close as we can to the real behavior" (p. 26).

The first problem with this conceptualization is the use of the term *realism.* It is a term with many meanings in intellectual history, and it is defined only in contrast to opposing views, which have included nominalism, idealism, phenomenalism, constructionism, and empiricism (my list is not exhaustive). Unfortunately, Baum's use of the term does not fit any of the historical meanings, and indeed conflates several. The second and more serious problem is that no behaviorist I can think of fits the description. Perhaps an obscure logical positivist may have held all four doctrines for a brief period of time, but none of the psychologists that we typically think of as methodological behaviorists (e.g., Stevens and Boring) are guilty of Baum's new form of realism.

The problems grow more serious with Baum's identification of radical behaviorism with pragmatism. According to Baum, for pragmatism, as opposed to realism, "scientific explanation consists only in describing events in terms that are familiar. It has nothing to do with revealing some hidden reality beyond our experience" (p. 24). Whereas realism assumes a common external objective world, for pragmatism, "the conflict between subjectivity and objectivity is . . . resolved in favor of subjectivity. Since there need not be an objective real world, objectivity . . . at most could be a quality of scientific inquiry" (p. 25). Now I agree that pragmatism is closely associated with behaviorism, and I have written extensively on their relation (Zuriff, 1980, 1985, chap. 12), but there are several things wrong with Baum's interpretation of behaviorist pragmatism. First, I do not understand it, and I bet that undergraduates won't either. What does it mean to reject realism's assumption of a common external objective world? If there is no real world external to us, then what is Baum doing in the rest of his book when he tells us all about the evolution of the human species, and the laws of behavior, and the design of cultures, and the way in which the social environment shapes the behavior of scientists? Is this Baum's subjectivity or a description of the real world? If scientific explanation does not reveal

"some hidden reality beyond our experience," then what is modern physics doing in its theories of quarks, curved space, *n*-dimensional geometry, charm, and weak forces? Even within the science of behavior, Baum is not clear on whether private events are observable or not (pp. 30–32).

Fortunately, Baum's metaphysics plays no role in the rest of his book. Beyond chapter 3, his position can be simply described as modern Skinnerian covert-event radical behaviorism. Nevertheless, I am reluctant to use this book as a representative of behaviorism in my undergraduate course on systems of psychology because of the problems I have just outlined. On the other hand, I am eager to try it (excluding the first three chapters) as a supplementary text in my undergraduate course in learning and behavior theory. I am somewhat concerned about the divergence between some of Baum's definitions (see discussion of *reinforcer* above) and those of the main textbook. Nevertheless, my guess is that undergraduates will find it understandable and stimulating. My hope is that they will learn from it how the behavioral principles taught in their main textbook constitute a powerful analysis for understanding the complexities of human behavior. I also think the book is sophisticated enough to recommend to colleagues interested in learning about contemporary behaviorism.

Undoubtedly *Science and Human Behavior* is a tough act to follow, and writing an introductory book that covers nearly all aspects of behaviorism as well as its connections with philosophy, cognition, social psychology, and evolutionary biology is a major challenge. Overall Baum manages to do a commendable job. He successfully updates Skinner, integrating new thinking in biology, philosophy, operant research, and Skinner's own later works. He clarifies areas of Skinnerian thought in which Skinner is hard to understand or simply did not work out an idea in detail. *Understanding Behaviorism* is not without its flaws, but we are indebted to Baum for this considerable accomplishment.

REFERENCES

Day, W. (1983). On the difference between radical and methodological behaviorism. *Behaviorism, 11,* 89–102.

Johnston, J. M., & Pennypacker, H. S. (1993). *Strategies and tactics of behavioral research* (2nd ed.). Hillsdale, NJ: Erlbaum.

Kaplan, J. S. (1991). *Beyond behavior modification.* Austin, TX: Pro-Ed.

Rachlin, H. (1984). Mental, yes. Private, no. *Behavioral and Brain Sciences, 7,* 566–567.

Ryle, G. (1949). *The concept of mind.* London: Hutchinson.

Schneider, S. M., & Morris, E. K. (1987). The history of the term *radical behaviorism*: From Watson to Skinner. *Behavior Analyst, 10,* 27–39.

Skinner, B. F. (1945). Rejoinder. *Psychological Review, 52,* 291–294.

Skinner, B. F. (1953). *Science and human behavior.* New York: Macmillan.

Skinner, B. F. (1969). *Contingencies of reinforcement: A theoretical analysis.* New York: Appleton-Century-Crofts.

Skinner, B. F. (1974). *About behaviorism.* New York: Knopf.

Stevens, S. S. (1935). The operational definition of psychological concepts. *Psychological Review, 42,* 517–527.

Zuriff, G. E. (1979). Ten inner causes. *Behaviorism, 7,* 1–8.

Zuriff, G. E. (1980). Radical behaviorist epistemology. *Psychological Bulletin, 87,* 337–350.

Zuriff, G. E. (1984). Radical behaviorism and theoretical entities. *Behavioral and Brain Sciences, 7,* 572.

Zuriff, G. E. (1985). *Behaviorism: A conceptual reconstruction.* New York: Columbia University Press.